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SPECIAL REPORT

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GETTING BOSTON'S SOLID WASTE OUT OF THE DUMPS

The Boston Public Works Department oversees the collection and disposal by private contractors of over 600 tons per day of residential solid waste. Commercial and industrial firms in the City are responsible for disposing of another estimated 1000 tons a day from their operations. With the closing of the City incinerator in 1975 and the City's only landfill in 1980, all of Boston's solid waste must be trucked outside the City limits for disposal. At present about 67% of Boston's residential refuse goes to landfills. Those offer an adequate and reasonably priced disposal option at present but may not in the future. The cost of landfill disposal will rise annually as state and federal regulations increase maintenance costs and close down some existing operations. Clearly Boston cannot continue to rely on landfills for handling the bulk of its waste disposal.

There are three basic solutions to the problem. All involve use of a waste-to-energy plant in which refuse is converted into steam or electricity. First, Boston could contract with existing regional disposal groups in Plainville and in North Andover to handle a share of its waste. Second, Boston could participate in a joint project with Boston Edison and Wheelabrator-Frye, Inc., the builder of a resource recovery plant in Saugus. Third, the City could proceed to hire its own contractor through competitive bidding. Before a decision is made, there are many questions and problems to be resolved. The City should retain both legal and financial counsel with expertise in the complex waste-to-energy field. Because of the amount of solid waste generated in Boston and the financial incentives for a community accepting a resource recovery plant within its boundaries, the new facility should be built in Boston. The logical site is the land occupied by the former City incinerator along the Southeast Expressway.

Collection of Residential Solid Waste--600 Tons Per Day

Boston's residential solid waste operation begins with the collection and transportation to disposal sites of 600 tons of refuse per day. The Public Works Department (DPW) has divided the City into 11 sanitation districts. For each district the DPW has awarded, via competitive bidding, separate one-year contracts with annual options to renew for two years. Actual payments to the contractors are based on the price per ton specified in the contract and the tonnage weighed at the point of delivery. The 1982 contracts anticipated the collection of 218,099 tons of solid waste at a total cost of \$6.4 million or \$29.25 per ton. Transportation expenses are included in this cost.

Boston led the nation in moving to contract out all solid waste collection in the early 1950's. It has also taken a number of other innovative steps such as dividing the City into districts, developing a proper balance of national and local firms as contractors, and staggering bid openings to heighten competition. A 1977 study by Columbia University's Center For Government Studies on cost and productivity comparisons of refuse collections pointed to these measures as ways municipalities can increase competition and control costs.

Total refuse collection costs in Boston increased from \$4.5 million in 1970 to \$6.4 million in FY 1982, a jump of 43%. However, when measured in constant dollars, that actually meant a decrease of 41%. Annual tonnage decreased after the City stopped accepting commercial solid waste in 1975. Collection costs increased due to higher wages and benefits in the early 1970's and higher fuel costs beginning in 1980. The costs per ton increased from \$14.19 in 1970 to \$29.25 in FY 1982.

Collection of Solid Waste

Year	Collection Costs		Annual Tonnage	Cost per Ton	
	Current \$	Constant \$*		Current \$	Constant \$
FY 1982	\$6,378,712	\$2,909,996	218,099	\$29.25	\$13.34
FY 1980	5,218,305	2,723,541	171,745	30.38	15.86
FY 1976	5,489,453	3,969,236	299,072	18.35	13.29
1972	5,992,669	5,992,669	324,980	18.44	18.44
1970	4,452,263	4,914,198	313,868	14.19	15.66

Disposal of Solid Waste

Year	Incinerator		Landfill		Outside Disposal		Total Disposal Costs		Annual Tonnage	Cost per Ton	
	Tonnage	\$ Ton	Tonnage	\$ Ton	Tonnage	\$ Ton	Current \$	Constant \$		Current \$	Constant \$
FY 1982	Closed		Closed		221,218	\$19.25	\$4,259,130+	\$1,943,034	221,218+	\$19.25	\$8.78
FY 1981	Closed		Closed		227,205	18.93	4,300,404	2,065,516	227,205	18.93	9.09
FY 1980	Closed		135,200	\$6.04	171,745	13.68	3,166,262	1,652,538	306,945	10.32	5.39
FY 1977	Closed		188,671	4.51	154,076	14.32	3,069,953	2,068,701	342,747	8.96	6.04
FY 1976	7,594	\$23.86	225,197	3.10	114,964	14.32	2,527,178	1,827,316	347,755	7.28	5.26
1970	140,396	11.60	213,563	1.95	--	--	2,045,456	2,257,678	353,959	5.78	6.38

Disposal--City Becomes Captive of Outside Market

In the early 1970's over 60% of the City's refuse was disposed of in its West Roxbury landfill and the balance in its incinerator off the Southeast Expressway. The incinerator was ordered shut down by the Environmental Protection Agency in August, 1975, because it could not meet air pollution standards, and efforts to upgrade or replace it failed. As a result the City began to dispose of some of its waste at the RESCO waste-to-energy plant in Saugus and at landfill sites outside the City. Around the same time the Gardner Street landfill in West Roxbury began nearing its capacity. By 1978 only refuse from Jamaica Plain, Hyde Park and West Roxbury was being accepted there. Efforts to buy more land for the dump failed after residents picketed the site, and the landfill was closed permanently in June, 1980. Since then all of Boston's waste has been trucked out of the City.

The refuse collected in the 11 districts is disposed of by four different methods. The waste from five districts is brought to two transfer stations where it is compacted for bulk transfer to landfills outside the City. The refuse of three districts is trucked directly to landfills in Peabody and Plainville. The RESCO plant disposes of the refuse of two districts, and the Braintree incinerator disposes of refuse from the northern half of Dorchester. In percentage terms, disposal by transfer station to landfill represents 40.5% of the total, to landfills direct 26.0%, to RESCO 21.6% and to the Braintree incinerator 11.9%.

Waste disposal expenses have increased even more rapidly than those for collection. Total disposal costs rose from \$2 million in 1970 to \$4.3 million in FY 1982, a 108% increase. In constant dollars, however, the cost actually decreased by 14%. In the same 11-year period, the cost per ton increased from \$5.78 to \$19.25. In constant dollars that meant a rise from \$6.38 to \$8.78. The disposal cost per ton at the Gardner Street landfill in its last year of operation in 1980 was only \$6.04. With the loss of this low cost disposal operation and a 38% increase in the disposal charges (tipping fees) at other sites, the overall disposal cost rose from \$10.32 per ton to \$18.93 per ton in the single year between FY 1980 and FY 1981.

Disposal Problems Ahead

Boston now relies on landfills outside the City for disposal of 67% of its solid waste. That fact may cause problems in the not too distant future. The state Bureau

of Solid Waste (BSWD) projects that the cost of a sanitary landfill will increase by 8% to 9% per year. Further increases are likely as landfill space becomes less available. The state Department of Environmental Quality Engineering (DEQE) estimates that about 60% of the state's 258 landfills are in violation of DEQE or EPA standards and could be closed. DEQE has shut down 27 landfills in the past 18 months and estimates as many as 100 to 150 more could be closed in the next five years. As that happens the cost of waste disposal at Boston's transfer stations is certain to rise. In addition trucking costs will increase if Boston's waste has to be hauled to disposal sites farther from the City. The Plainville and Peabody landfills, which directly handle City wastes under contract, do not appear to be in any danger of being closed. However, Plainville is earmarked as the back-up and residue landfill for the waste-to-energy facility planned by the 128 West Resource Recovery Council. It may not accept material from non-member communities when that plant begins operation in the late 1980's.

Disposal Methods of Solid Waste By District and Contractor
FY 1982

<u>District</u>	<u>Collection Contractor</u>	<u>Delivery Point</u>	<u>Type of Facility</u>	<u>Disposal Contractor</u>
Charlestown	Banfield and Associates	East Street, Cambridge	Transfer Station*	Browning Ferris Industries
Boston Proper	Charles Lee Dispossl	RESCO, Saugus	Waste-to-Energy Plant	Refuse Energy Systems Co.
Jamaica Plain	Joseph Amara & Sons	Norfolk Ave, Roxbury	Transfer Station	SCA Disposal Services
Dorchester, North	Banfield and Associates	Braintree	Incinerator	Town of Braintree, Charles Assoc.
Brighton	Browning Ferris Industries	East Street, Cambridge	Transfer Station	Browning Ferris Industries
South Boston	SCA Disposal Services	Peabody	Landfill	SCA Disposal Services
West Roxbury	Browning Ferris Industries	Plsinvillle	Landfill	Browning Ferris Industries
Dorchester, South	Browning Ferris Industries	Plsinvillle	Landfill	Browning Ferris Industries
Hyde Park	SCA Disposal Services	Norfolk Ave., Roxbury	Transfer Station	SCA Disposal Services
East Boston	SCA Disposal Services	RESCO, Saugus	Waste-to-Energy Plant	Refuse Energy Systems Co.
Roxbury	United Contracting Co.	East Street, Cambridge	Transfer Station	Browning Ferris Industries

*Station where solid waste is compacted for bulk transport to landfills outside the city.

Long-Range Disposal Options

The best long-range answer to Boston's disposal problems is the waste-to-energy process. Its costs are expected to rise less than those at landfills in the years ahead even with implementation of the new bottle bill. Boston itself generates about 1600 tons of residential, commercial and industrial solid waste a day. That is sufficient to make construction of a plant in Boston feasible, even though the DPW cannot guarantee more than the residential refuse it oversees. The key questions then are the method of operation and the site.

One option for Boston is to join other ventures outside the city. Boston can contract with the 128 West Resource Recovery Council, which is developing a 1500-ton-per-day waste-to-energy facility in Plainville to become operational by 1986. The City could also contract with the Northeast Solid Waste Committee, which plans to build a 1500-ton-per-day facility in North Andover scheduled to begin operation in 1985. Boston could also increase its use of the RESCO plant in Saugus. Use of those outside facilities would provide a painless solution to the site problem but would mean continuing high transportation costs.

A second option would be for the City to join the proposed RESCO II operation under consideration for the past two years by Boston Edison and Wheelabrator-Frye, Inc., the builder of RESCO I in Saugus. The proposed RESCO II, located in or near Boston, would be able to handle all of the City's residential solid waste and more. The operation would make its money from both the sale of energy, either steam or electricity, and the tipping fees. The joint RESCO II venture would reduce much of the risk associated with waste-to-energy facilities. Boston Edison would be able to market the energy and Wheelabrator-Frye has demonstrated its competence in building and running such a facility. Its Saugus operation has been profitable since 1979. The project could be financed by revenue bonds outside of the city debt structure. However, Boston would have to agree to provide a minimum amount of solid waste for up to 20 years and be prepared to make up any shortfall in cash. This arrangement, a "put or pay contract",

does not affect the City's debt limit, though it is treated as a long-term obligation by the bond-rating agencies.

A third option is for Boston to get competitive bids on construction and operation of a plant which meets the City's specifications. As with the second option, the facility would be private with the City guaranteeing to deliver residential solid waste for a period of up to 20 years. This is the option most likely to be exercised by the City. Boston Edison and Wheelabrator-Frye could submit a proposal. If not selected Boston Edison would then purchase the energy generated.

Locating a resource recovery plant in Boston would provide a number of economic benefits for the City. A privately owned facility would pay Boston \$1 for each ton of solid waste processed. That could come to \$500,000 a year. Shorter hauling distances could save another \$200,000 annually at current prices. Energy generated from the refuse could save Boston Edison on the fuel costs for steam production. That, in turn, could save the City up to \$500,000 of money it now pays for steam for its buildings. Conversion of the waste into electricity would not provide the same direct savings to the City. The prime site for the plant appears to be the land now occupied by the City incinerator. The immediate area is industrial, with easy access to the Southeast Expressway and proximity to the Boston Edison steam loop.

Next Steps

As it moves ahead on these options, the City should retain legal and financial counsel with experience in the complex waste-to-energy field to handle the negotiations for sharing risks and revenues. For example, a "put or pay" arrangement with a private operator should hold the operator responsible for disposal of Boston's waste at all times, whether or not the facility is operating. The City's contract should allow for generation of electricity if the steam market declines. The contract should specify who will pay for the capital investment if conversion to electricity production begins in the middle of the contract. Advance negotiations should also determine whether the City should receive a percentage of all energy revenues. The City should also start planning for the site and retain flexibility in its disposal contracts to allow delivery to a resource recovery plant once it becomes operational.

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